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**Subject:** New journal article: Sensitivity of the regional ocean acidification and carbonate system in Puget Sound to ocean and freshwater inputs  
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The journal article, Sensitivity of the regional ocean acidification and carbonate system in Puget Sound to ocean and freshwater inputs, is available at <https://fortress.wa.gov/ecy/publications/SummaryPages/1803015.html>.

This article was published in Elementa Science of the Anthropocene 2018, 6:22. It was co-authored by staff from the Department of Ecology and other agencies.

While ocean acidification was first investigated as a global phenomenon, coastal acidification has received significant attention in recent years, as its impacts have been felt by different socio-economic sectors (e.g., high mortality of shellfish larvae in aquaculture farms).

As a region that connects land and ocean, the Salish Sea (Puget Sound and the Straits of Juan de Fuca and Georgia) receives inputs from many different sources (e.g., rivers, wastewater treatment plants, industrial waste treatment facilities), making these coastal waters vulnerable to acidification. Moreover, the lowering of pH in the Northeast Pacific Ocean also affects the Salish Sea, as more acidic waters get transported into the bottom waters of the straits and estuaries.

Here, we use a numerical ocean model of the Salish Sea to improve our understanding of the carbonate system in Puget Sound; in particular, we studied the sensitivity of carbonate variables (e.g., dissolved inorganic carbon, total alkalinity, pH, saturation state of aragonite) to ocean and freshwater inputs. The model is an updated version of our FVCOM-ICM framework, with new carbonate-system and sediment modules.

Sensitivity experiments altering concentrations at the open boundaries and freshwater sources indicate that not only ocean conditions entering the Strait of Juan de Fuca, but also the dilution of carbonate variables by freshwater sources, are key drivers of the carbonate system in Puget Sound.

If you have questions, contact Greg Pelletier at 360-407-6485 or [gpel461@ecy.wa.gov](mailto:gpel461@ecy.wa.gov).

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Puget Sound Nutrient Source Reduction Project web page:  
<https://ecology.wa.gov/Water-Shorelines/Puget-Sound/Helping-Puget-Sound/Reducing-Puget-Sound-nutrients>

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